

REMARKS

This is in response to the non-final Official Action currently outstanding with regard to the present application.

Claims 1-11 were pending in this application at the time of the issuance of the currently outstanding Official Action. In order to maintain a logical sequence in the presentation of the claims of this application Claims 2-11 have been canceled by the above Amendment and the subject matter thereof has been represented as new Claims 15, 16, 20, 21, 22, 23, 26, 29, 30, and 38. Further, new claims 12-14, 17-19, 24, 25, 27, 28, 31-37 and 39-57 have been added. Accordingly, upon the entry of the foregoing amendment, Claims 1, and 12-57 will constitute the Claims under active prosecution in this application.

More particularly, in the currently outstanding Official Action the Examiner has:

1. Acknowledged Applicants' claim for foreign priority under 35 USC 119 (a)-(d) or (f),
and confirmed the receipt of the required copies of the priority documents by the United States Patent and Trademark Office;
2. Accepted the drawings as filed on 1 June 2002;
3. Acknowledged his consideration of the Information Disclosure Statement filed in this application by providing the Applicants with a copy of the Form PTO-1449 that accompanied that Statement duly signed, dated and initialed to confirm the consideration of the art listed therein;
4. Rejected Claim 1, 4/1 and 7/1 under 35 USC 102(b) as being anticipated by Kojima (US Patent 5,410,351);
5. Rejected Claim 11 under 35 USC 102(b) as being anticipated by Yoshimi et al. (JP 11055672 A) cited by the Applicant;

6. Rejected Claim 10 under 35 USC 103(a) as being unpatentable over Katsuyuki et al (JP 10243261 A) cited by the Applicant, in view of Stenzel et al (US Patent 5,737,032);
7. Indicated that Claims 2, 3, 4/2/1, 4/3/1, 5/4/1, 5/4/3/1, 6/4/1, 6/4/3/1, 7/4/1, 7/4/2/1, 7/4/3/1, 8/7/4/3/1, 8/7/4/2/1, 8/4/3/1, 9/7/4/1, 9/7/4/2/1 and 9/7/4/3/1 would be allowable if rewritten in independent form including all of the limitations of their respective base claims and any intervening claims.
8. Cited, but failed to apply against any of the claims, certain references deemed to be "pertinent to Applicants' disclosure".

No further comment is deemed to be required in these Remarks concerning items 1-3 and 8 above.

With respect to item 4 above, Applicants respectfully traverse the Examiner's rejection of Claims 1, 4/1 and 7/1 as being anticipated under 35 USC 102(b) by Kojima (US Patent 5,410,351). To support a rejection based upon alleged anticipation under 35 USC 102(b), the Examiner is required to show that each and every element of the rejected claim is found either expressly or inherently in a single prior art reference. Applicants respectfully submit that the Examiner's rejection of claims 1, 4/1 and 7/1 fails to provide the showing required to justify the Examiner's rejection.

In particular, the presently claimed invention specifies that "characteristic pixels" are to be extracted using input and decoded images, and further that a "characteristic distortion" is calculated utilizing the "characteristic pixels" to calculate a "characteristic distortion of the decoded images in relation to the input images". This is not what the Kojima reference discloses/teaches.

Accordingly, with reference to claim 1, it will be understood that the claimed invention differs from the Kojima reference in that the device comprises "means of characteristic pixel extraction which utilizes input images and decoded images obtained by means of image decoding to extract characteristic pixels". In addition, the "means of calculating characteristic distortion which utilizes characteristic pixels to calculate characteristic distortion of the decoded images in relation to the input images; and means of parameter value control which controls parameter values determining the extent of data compression in the means of image encoding in accordance with the characteristic distortion" are specifically provided in Claim 1 of this application.

The Kojima reference discloses a technique involving unit blocks, namely block groups that are constituted by pixels wherein the distortion of an entire block group is calculated based upon an average of the calculated distortions of the individual blocks that make up the block group. Thus, it is clear that the Kojima reference does not calculate the distortion of a characteristic pixel.

On the other hand, the device recited in Claim 1 of this application comprises the feature whereby a characteristic distortion of each unit block in a block group is calculated using a characteristic pixel. The provision of this feature in the present invention, i.e., performing the distortion calculation by focusing attention on a "characteristic pixel", allows the extent of the calculations required to determine the distortion to be significantly reduced.

Accordingly, Applicants respectfully submit that since the Kojima reference deals with block groups (referred to as "GOB") made up of unit blocks that in turn are constituted by picture elements (i.e., pixels) and defines his distortion calculation for the entire block group as being based upon an average of the calculated distortions of the individual blocks that make up the block group, it is clear that Kojima is not calculating a "characteristic" distortion of each unit block based upon a characteristic distortion of a characteristic pixel in each respective unit block as is being claimed by the present application. Therefore, Applicants respectfully submit that the conclusion is inescapable that the Kojima reference fails to anticipate Claims 1, 4/1 and 7/1 under 35 USC 102(b) as the Examiner has asserted in the currently outstanding Official Action.

In view of the foregoing discussion, Applicants respectfully request reconsideration and withdrawal of the currently outstanding rejection of Claims 1, 4/1 and 7/1 of this application in response to this communication.

With respect to item 5, the Examiner has rejected Claim 11 (now Claim 38) under 35 USC 102(b) as being anticipated by Yoshimi et al. (JP 11055672 A). The standard that the Examiner must satisfy in support of this rejection is the same as that just discussed with respect to the Examiner's rejection of Claims 1, 4/1 and 7/1. Again Applicants respectfully submit that the Examiner has failed to satisfy the requirements for a rejection under 35 USC 102(b). Accordingly, Applicants respectfully traverse the Examiner's currently outstanding rejection of Claim 11 of this application.

More specifically, Applicant respectfully submits that JP11-55672 is clearly distinct and different from the present invention for the following reasons.

The presently claimed invention relates to a technique useful with respect to still images (or if with respect to moving images, only to the intra-frame coding thereof). The JP11-55672 reference, on the other hand, relates to a technique useful with respect to moving images. Accordingly, Applicants respectfully submit that the cited reference is basically inapposite to the presently claimed invention, with the possible exception of the portions thereof that deal with intra-frame coding.

Accordingly, it should be understood that in original Claim 11 (now claim 38) an image is once encoded by an irreversible encoding method, the magnitude of the characteristic distortion from an input image is calculated on a small region unit by small region unit basis, the image is divided into regions in accordance with the magnitude of the characteristic distortion, divided regions are encoded according to first-region images of a stipulated region divided portion of the region divided image and second-region images having a required picture quality, and the encoded data for the first-region images and the second region images is combined into a single set of encoded data. More specifically, if a portion of the image that has been actually compressed by the irreversible encoding method has significant distortion, that portion is deemed to be incapable of maintaining a sufficient quantity by that irreversible encoding method, and it is deemed that that portion is to be encoded by a different encoding method.

On the other hand, to the extent that the JP-11-55672 reference deals with intra-frame encoding, no comparison is made between the image that has been once encoded and the input image for the purpose of calculating a characteristic distortion as herein claimed. Instead, in the cited reference to the extent that the result of an encoding is compared with an input image, that comparison is for the purpose of locating differences between the present image and a previous image, not for the encoding of the present image. Accordingly, Applicants respectfully submit that to the extent that the cited reference discloses a comparison of an encoded image with an input image, that comparison is different from, and is made for the accomplishment of a totally different objective than that of, Claim 11 (now Claim 38) of the present invention.

Accordingly, Applicants respectfully submit that the Examiner has failed to show that each and every element of the rejected claim (i.e., Claim 11 (now Claim 38)) is found either expressly or inherently in a single prior art reference. A decision so holding in response to this communication is respectfully requested.

Finally, with respect to item 6 above, the Examiner has rejected Claim 10 under 35 USC 103(a) as being unpatentable over the Katsuyuki et al reference (JP 10243261 A), in view of the Stenzel et al reference (US Patent 5,737,032). Applicant again respectfully traverses the Examiner's outstanding rejection.

While the object of the present invention is to enhance compression performance, the object of the cited reference is to achieve display matching. Thus, in the reference, an encoded image can be optimally displayed on a display unit by performing encoding after amplifying the pixel value areas of the display unit that have a low reproducibility. Conversely, however, in the present invention, when producing an encoded image for the same display apparatus, the pixel value areas with the lower reproducibilities are reduced before encoding. Thus, contrary to the cited reference, the present invention takes advantage of the fact that deterioration in pixel value area of the display unit with lower reproducibility is less conspicuous than in the other areas. This in turn allows the number of gradations in those pixel value areas (i.e., the pixel value areas of the present invention) to be reduced with a corresponding improvement in encoding efficiency over that achievable by the cited reference.

In addition, in the reference, pixel value conversions suitable for a particular display unit are performed upon encoding such that the pixel value areas of the display unit with lower reproducibility are amplified. Further, the pixel values are encoded, and, when displaying (i.e., decoding) the encoded image, the encoded image can be simply decoded and then displayed. In the presently claimed invention, on the other hand, pixel value conversion is performed upon encoding, the pixel value areas of the display unit with lower reproducibility are reduced, and then the data is encoded. Therefore, when the encoded image is to be displayed, it must be decoded and the decoded image must be subjected to a pixel value conversion. Accordingly, as will be seen from the table in Fig. 9, the input data with 256 gradations (i.e., 0 to 255) is reduced by pixel value reduction upon encoding to 192 gradations (i.e., 0 to 191). Consequently, in the present invention it is necessary to perform pixel value conversion after decoding. However, by reducing the pixel value areas of the display unit with lower reproducibility, the dynamic range of the entire image can be reduced and the encoding efficiency can be improve

It will be recalled that in order to establish a *prima facie* case of unpatentability under 35 USC 103(a) the Examiner must satisfy the following criteria:

To establish a *prima facie* case of obviousness under Section 103, Title 35 United States Code (35 US §103), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2D 1438 (Fed. Cir. 1991). (See, Manual of Patent Examining Procedure §2142 (8th Edition), at page 2100-2121, *et seq.*)

Applicants respectfully submit that these criteria (particularly the suggestion for making the claimed combination within the four corner of the prior art) are not satisfied by the Examiner's currently outstanding rejection of Claim 10 (present Claim 20 with some modifications).

Applicants also believe that additional fees beyond those submitted herewith are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. 04-1105, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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SIGNATURE OF PRACTITIONER

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